

E-Learning Adoption as a Bridge Between Digital Readiness and E-Entrepreneurship Intention: A Moderated Mediation Approach

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ABSTRACT

University students, often seen as digital natives, are usually acquainted with e-learning platforms early in their academic careers to enhance their educational outcomes. Nonetheless, previous studies have shown inconsistent results about the correlation between digital readiness and e-entrepreneurship. This research sought to examine university students' views of digital readiness grounded on their experiences and to analyze the mediating effects of e-learning adoption and the moderating role of perceived behavioural control. The study included 300 students from the different universities of Pakistan. The research used Process Macro to examine the relationship among students' views of digital readiness and E-entrepreneur intentions. The results underscore the essential functions E-Learning adoption as mediator and perceived behaviour control as a moderator in the correlation between students' digital readiness and E-entrepreneurship intention. Although students often expressed positive opinions on campus-based e-learning experiences, the research highlights the need for robust digital abilities and proactive involvement to attain academic achievement in digital learning contexts. These insights provide essential assistance for students, instructors, and academic administrators seeking to enhance the integration of e-learning in higher education.

Keywords: Digital Readiness, E-learning Adoption, Perceived behavior control, E-Entrepreneurship.

INTRODUCTION

Higher education in Pakistan is undergoing an accelerated digital transformation that is reshaping how students learn and how entrepreneurial intentions may develop (Bhutto et al., 2025). Digital readiness, students' access to devices and connectivity, plus their skills, attitudes, and institutional supports for digital technologies has emerged as a foundational antecedent of both successful e-learning adoption and digitally enabled entrepreneurial pursuits (Rajasekaran et al., 2024; Bhandari & Mohite, 2024). Recent reviews and empirical work highlight that institutional digital strategies and students' preparedness jointly determine whether digital investments translate into meaningful educational and vocational outcomes (Kusmawan, 2025; Thelma, 2024).

E-entrepreneurship intention the conscious plan or desire to launch online or technology-based ventures is increasingly important for youth employment in Pakistan (Hussain et al., 2024). Studies of Pakistani university cohorts show that entrepreneurship education, mindset, and digital exposure are positively associated with students' entrepreneurial intentions, but effects vary depending on access to technology and perceived capability to use it (Bokhari et al., 2025; Khan et al., 2025; Munir et al., 2024). Thus, understanding how digital readiness feeds into e-entrepreneurship intention has both theoretical and practical relevance for policy and university programming.

E-learning adoption operates as a plausible mediator between digital readiness and e-entrepreneurship intention. When students are digitally ready, they are more likely to adopt and engage meaningfully with online learning platforms (Adininggar et al., 2025; Aysi et al., 2024); in turn, well-designed e-learning can

deliver entrepreneurial knowledge, digital skills, and exposure to online business models that shape students' entrepreneurial cognition and intentions (Abaddi, 2024). Empirical studies from Pakistan applying TAM and related models confirm that perceived usefulness, ease of use, and actual adoption of e-learning significantly influence behavioural outcomes in academic and career domains, suggesting mediation is a testable pathway (Raza et al., 2025; Saboor et al., 2025). Perceived Behavioral Control (PBC hereafter), a central construct in the TPB (Purnama et al., 2024), is likely to moderate one or both links in this model. Students who perceive higher control over digital resources, time management, and entrepreneurial tasks are more apt to translate e-learning gains into concrete entrepreneurial intentions (Atomsa, 2024; Wong et al., 2024). Pakistani studies applying the Theory of Planned Behaviour (TPB hereafter) to entrepreneurship consistently report PBC as a strong predictor and boundary condition of intention formation, indicating that even with high digital readiness and e-learning adoption, low perceived control can weaken the effect on e-entrepreneurship intention (Al-Mamary et al., 2024; Raza et al., 2024).

Despite these promising linkages, gaps remain in context-specific evidence: Pakistan's digital divide (urban/rural, gender, socioeconomic) affects readiness and e-learning quality, and no studies have empirically tested a mediated moderation model that places e-learning adoption between digital readiness and e-entrepreneurship intention with PBC as a moderator. Addressing this gap will inform targeted interventions (e.g., skill clinics, connectivity support, entrepreneurial e-courses) to better convert digital infrastructure and learning experiences into entrepreneurial

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outcomes for Pakistani university students. In sum, an integrated model positioning e-learning adoption as a mediator of the digital readiness e-entrepreneurship intention link, with PBC as a moderator, is theoretically justified and practically urgent for Pakistan. Testing this model among university students can help universities and policymakers design digital and pedagogic supports that increase the likelihood that digital inclusion will translate into tangible entrepreneurial activity.

Recently, higher education institutions have emphasized improving students' academic performance by integrating new digital technologies that disrupt conventional educational delivery (Alenezi et al., 2023; Alenezi, 2023). University-affiliated e-learning platforms are essential for distributing educational resources, facilitating communication between educators and learners, promoting collaborative learning environments, monitoring academic advancement, and providing flexible access to courses (Abubakar et al., 2024; Akintayo et al., 2024). Digital learning experiences are increasingly integral to students' academic journeys, enhancing both academic success and the development of lifetime learning skills crucial for personal growth (Bhardwaj et al., 2025). E-learning in higher education is characterized as a dynamic learning ecosystem that integrates digital platforms with pedagogical methodologies, signifying a significant transformation in educational innovation (Singh & Kumar, 2024). Prominent benefits of these systems include less reliance on physical infrastructure, enhanced accessibility of digital course materials, and the enablement of learning at any time and place, with more integration into the global educational landscape (Omodan, 2024). A notable trend in higher education is the transition from teacher-centered teaching to learner-centered methodologies, facilitated by technology (Allayarova, 2025). In Korea, students are progressively using e-learning platforms before university enrollment via pre-college programs, indicating an early integration into digital education (Kennedy, 2023). To address varied educational needs and enhance instructional quality, several institutions have invested in developing advanced e-learning environments (Dritsas & Trigka, 2025). The availability of high-quality digital resources has facilitated the development of blended and flipped classrooms, augmenting conventional education with interactive and adaptable digital information (Low et al., 2021). Consequently, colleges are embracing e-learning as both a primary approach and an adjunct to in-person instruction, in accordance with the preferences of digital-native students (Kaliraj et al., 2024). This tendency in Korea is affected by educational policy and the changing requirements of both professors and students (Kim, 2021). Although it is often assumed that students have the confidence and expertise to effectively engage with e-learning settings owing to their digital upbringing, research indicates diverse attitudes among students about these platforms (Elbyaly & Elfeky, 2023).

Universities use digital technology to improve academic achievements by creating and delivering learning material, as well as structuring and managing courses efficiently (Habib et al., 2021). The expansion of e-learning has been hastened by improvements in internet access, multimedia resources, mobile technology, and the sophisticated capabilities of learning

management systems (Liu & Yu, 2023). The worldwide proliferation of university e-learning technologies significantly enhances academic achievement (Chikileva et al., 2023). These technologies provide customized learning experiences by tailoring resources and tactics to the distinct requirements of individual students (Salem & Shaalan, 2025). The higher education industry is progressively embracing blended learning to enhance student involvement, using fundamental digital technologies, advanced features such as lecture capture, online debates, and social media integration (Sethi & Singh, 2024). Nonetheless, despite the encouraging promise of these methods, results continue to be variable. Certain studies indicate heightened satisfaction, diminished dropout rates, improved academic performance, and enhanced reflective thinking (Dekker et al., 2024; Tzimas & Demetriadis, 2024; Zhai et al., 2023), whereas others reveal no significant or even adverse correlations between e-learning satisfaction and academic outcomes such as GPA (Zalazar-Jaime et al., 2023; Rasheed et al., 2022). The discrepancies in results may arise from differing degrees of students' digital competency, engagement, motivation, and confidence in efficiently using e-learning technologies for their academic requirements.

LITERATURE REVIEW

Digital readiness, defined as the preparedness of individuals or institutions to effectively deploy and use digital technologies, plays a pivotal role in enabling entrepreneurship (Chen et al., 2024). Recent research underscores that digital readiness serves as a direct catalyst for entrepreneurial activity, particularly in contexts where digital infrastructure and skills are gaining prominence (Duong, 2024).

For instance, Begum et al. (2024) examined how digital education platforms function as catalysts for entrepreneurial ventures. Their mixed-methods study found that these platforms significantly enhance entrepreneurial skill development, global connectivity, and real-time learning factors that contribute directly to the launch and sustainment of entrepreneurial initiatives (Begum et al., 2024). This implies that when individuals are digitally prepared through access to digital platforms and supportive learning environments, they are more likely to adopt entrepreneurial behaviors and ventures. Similarly, Satar et al. (2024) investigated the role of digital learning orientation (DLO) in cultivating entrepreneurial competencies among graduates. Their structural equation modeling analysis revealed a direct, positive relationship between DLO and entrepreneurial competencies skills essential for venture creation and emphasized that such readiness significantly shapes entrepreneurial capacity (Satar et al., 2024).

Another pertinent example is the study by Singh et al. (2024), which looked at digital entrepreneurial education and training and its impact on entrepreneurial intention. The research demonstrated that digital training not only boosts entrepreneurial competence but also directly increases entrepreneurial intention. The authors reported that entrepreneurial competence mediates the relationship, but a clear direct link from digital training to entrepreneurial intention was evident (Singh et al., 2024). Collectively, these studies illustrate a consistent pattern: digital readiness, whether through educational platforms, orientation toward digital learning, or targeted training, directly enhances

entrepreneurial potential. Mechanisms include skill acquisition (e.g., opportunity recognition, innovation, digital literacy), exposure to entrepreneurial thinking, and enhanced access to networks and resources (Begam et al., 2024; Singh et al., 2024; Satar et al., 2024).

In practical terms, for Pakistani university students, this relationship signals that investments in digital infrastructure, e-learning platforms, and digital literacy are not just upgrading educational delivery they are unlocking entrepreneurial capacity and intention (Aijaz et al., 2024). Universities that strengthen students' digital readiness are more likely to produce graduates who are not only confident in navigating digital environments but also primed to launch entrepreneurial ventures (Prokopenko et al., 2024). Understanding this direct relationship is crucial for policymakers and educators: rather than seeing digitalization simply as a means for remote learning, it must be leveraged strategically as a foundation for entrepreneurship development. By integrating digital readiness initiatives, such as access to tools, experiential online learning, and digital entrepreneurship modules, into curricula, institutions can directly foster the next generation of digital entrepreneurs.

E-Learning Adoption as a Mediator between Digital Readiness and Entrepreneurship

Digital readiness, which encompasses access to digital infrastructure, confidence in using technology (ICT self-efficacy), and a positive attitude toward digital modes of learning, lays the groundwork for meaningful educational and entrepreneurial outcomes (Mugunzva, 2024). Yet, the pathway from being digitally ready to actually becoming entrepreneurial often flows through the intermediate step of e-learning adoption. Evidence from the Pakistani higher-education context supports this mediating role. In a study of business and entrepreneurship students in Pakistan, Aftab (2022) found that digital readiness, including competence, attitudes toward e-learning, and self-directed learning, increased student engagement, which, in turn, positively affected academic achievement (Aftab, 2022). While the outcome in that study was academic performance, the mechanism of digital readiness enabling engagement through e-learning suggests a broader capacity-building model that could extend to entrepreneurship (Aftab, 2022).

Digital education platforms further illustrate this mechanism. Begum et al. (2024) demonstrated how digital education platforms fostered entrepreneurial skills, global networking, and real-time learning that empower individuals to initiate ventures. These platforms effectively translate digital readiness into entrepreneurial capability through e-learning adoption. In more general terms, digital tools such as Moodle, Capsim, Tableau, and Kahoot are shown to mediate learning outcomes by facilitating experiential learning connected to entrepreneurship, transforming readiness into entrepreneurial skill development when e-learning is adopted (Ali et al., 2025)

Taken together, this evidence supports a mediated model: digital readiness → e-learning adoption → entrepreneurship. Specifically, students or individuals who are digitally ready are more likely to engage actively in e-learning platforms; that engagement enables the development of entrepreneurial competencies such as

opportunity recognition, innovation, and digital networking, which are foundational for launching entrepreneurial ventures (Wahab & Akintade, 2025). For Pakistani university students, this mediated pathway is especially relevant. Digital readiness through access to devices, internet, digital literacy, and positive e-learning attitudes must be activated via actual e-learning adoption (e.g., participation in online courses, interactive platforms, digital projects). It's the active use of e-learning, not just readiness, that catalyzes entrepreneurial thinking and behavior (Huang, 2022).

Thus, institutions aiming to foster student entrepreneurship should focus not only on creating infrastructure and building digital readiness, but also on encouraging and structuring e-learning adoption through entrepreneurial online courses, platforms that blend theory and experiential projects, and tools that facilitate collaboration and real-world entrepreneurial exposure. Ultimately, e-learning serves as the bridge: without digital readiness, students may not adopt e-learning; without e-learning adoption, digital readiness alone remains under-leveraged. But when both are in place, e-learning adoption becomes the engine converting readiness into entrepreneurial action.

Perceived Behavioral Control (PBC) as a Moderator between E-Learning Adoption and E-Entrepreneurship Intention

PBC is the individual's belief in their capacity to execute a behavior, including access to resources, skills, and institutional supports, is a vital moderating factor in transformational models. According to the Theory of Planned Behavior (TPB), PBC interacts with behavioral intentions, shaping whether intentions translate into actual behavior (Ajzen, 1991). Specifically, TPB is expected to moderate the pathway between e-learning adoption and e-entrepreneurship intention: the positive effect of e-learning on entrepreneurial intention should be stronger when individuals perceive greater control over the process.

Empirical studies underscore PBC's pivotal role. For instance, TPB-based research demonstrates that PBC not only directly influences intentions but also aids in bridging the "intention-behavior gap" by reinforcing perceived feasibility (Ajzen, 1991). In entrepreneurial contexts, PBC has consistently emerged as a robust predictor of entrepreneurial intention, particularly when students perceive strong internal competence and resource availability (e.g., discipline-specific strengths among Pakistani university graduates) (Asad et al., 2025). While direct studies on PBC's moderating role between e-learning and entrepreneurship intention remain limited, insights from adjacent domains suggest its importance. For instance, studies examining moderation effects within TPB frameworks reveal that constructs like self-efficacy, which overlap with PBC, can enhance the impact of educational interventions (Ajzen, 1991). Indeed, individuals with higher PBC are more likely to convert learning experiences into tangible intentions and actions, as they feel capable of leveraging learned knowledge and overcoming challenges.

In the Pakistani higher education context, consider a student adopting entrepreneurial e-learning modules. If that student perceives low control due to unreliable internet, limited digital skills, or a lack of institutional support, their e-learning efforts may yield limited entrepreneurial intention. Conversely, a student with high PBC confident in their digital competence and supported by

infrastructure would likely be more able to translate knowledge into actionable entrepreneurial intention. Thus, PBC serves as a moderator: when PBC is high, the effect of e-learning adoption on e-entrepreneurship intention is amplified; when PBC is low, the same level of adoption yields a subdued impact.

This moderate relationship has important implications:

1. Institutional strategies: Universities should not only promote e-learning for entrepreneurship but also enhance students' PBC through digital skills training, mentorship, startup incubation support, and access to resources to maximize effectiveness.
2. Model refinement: Empirical research should incorporate interaction terms (e-learning adoption \times PBC) when predicting e-entrepreneurship intention, enabling nuanced insights into when e-learning is most effective.
3. Policy design: Support programs for entrepreneurship education should go beyond content delivery to include efforts that build students' confidence, resource leverage, and self-efficacy to turn learning into entrepreneurial action.

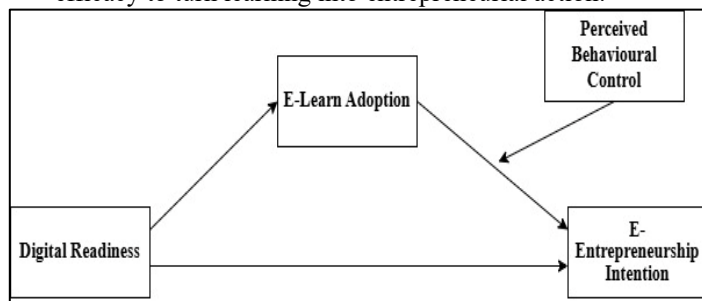


Figure 1: Theoretical Framework

METHODS

The data were collected as part of a larger study on the quality of undergraduate educational experiences at the university, particularly students' digital learning experiences. The survey was conducted through a self-administered online questionnaire using SurveyMonkey. The students who volunteered were sent an email in which they were asked to click on an attached Internet address that linked to the target survey. Digital readiness was adopted by Hong and Kim (2018), who measured college students' perceived digital competencies for academic engagement. Digital readiness is regarded as necessary for college students' academic success. All 17 items were measured using a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale showed strong reliability in this study: Cronbach's alpha was equal to .91. For e-learning adoption, PBC in e-learning is measured through a student's evaluation of resources and their capabilities when engaged in e-learning (Chu & Chen, 2016). An individual evaluation by college students of personal capabilities and resources is also an antecedent of the adoption of e-learning components. PBC is known to be a positive predictor of the intention to adopt e-learning (Chu & Chen, 2016). The three items were adapted from Chu and Chen (2016). Sample items included, "I have the necessary knowledge for using the university e-learning system," "Using the university e-learning system is entirely within my control," and "I have the necessary resources for using the university e-learning system." The scale showed

strong reliability in this study: Cronbach's alpha was equal to .85. Perceived behaviour control refers to the perceived ease (or difficulty) of starting an e-enterprise; three measurement items were adapted from (Solesvik, 2013). E-entrepreneurial intention refers to an individual's desire to create an e-enterprise; five measurement items were adapted from (Solesvik, 2013).

RESULTS

Table 1: Demographics Analysis

Demographics	Categories	N	%	
Gender	Male	220	73.3	
	Female	80	26.7	
	Total	300	100.0	
Age	21-30	100	33.3	
	31-40	160	53.3	
	40-Above	40	13.3	
	Total	300	100.0	
Education	Graduation	60	20.0	
	Masters	110	36.7	
	M.Phil	100	33.3	
	Professional Certificate	30	10.0	
	Total	300	100.0	
	Institution Name	University of the Punjab	40	13.3
		Government College University	40	13.3
		Superior University	40	13.3
		COMSAT University	30	10.0
		Bechan House University	80	26.7
Garrison University		50	16.7	
Lahore College		20	6.7	
Women's University		20	6.7	
Total		300	100.0	
Job Experience		1-5 year	150	50.0
	6-10 year	90	30.0	
	11- 15 year	40	13.3	
	16 and above	20	6.7	
	Total	300	100.0	

The demographic profile of the respondents reveals that out of 300 participants, the majority were male (73.3%), while females comprised 26.7%. In terms of age, most respondents were between 31 and 40 years old (53.3%), followed by those aged 21–30 years (33.3%) and a smaller proportion above 40 years (13.3%). Regarding educational qualifications, 36.7% held a master's degree, 33.3% had an M.Phil, 20.0% were graduates, and 10.0% possessed a professional certificate. Participants were affiliated with various institutions, with the highest representation from Bechan House University (26.7%), followed by Garrison University (16.7%), and equal representation (13.3% each) from the University of the Punjab, Government College University, and Superior University. COMSAT University accounted for 10.0% of respondents, while Lahore College for Women University made up 6.7%. Concerning job experience, half of the participants (50.0%)

had 1–5 years of experience, 30.0% had 6–10 years, 13.3% had 11–15 years, and only 6.7% had over 16 years of experience.

Table 2: Data Normality test

Variable	Mean	S.D	Skew	Kur
Digital Readiness	3.046	.408	-.555	.020
E- Learning Adoption	3.538	.714	-.658	-.688
Perceived Behavior Control	3.454	.804	-.633	-.352
E- Entrepreneurship Intention	3.569	.688	-.288	-.268

The descriptive statistics of the study variables indicate that digital readiness has a mean score of 3.0468 with a standard deviation of 0.40840, suggesting that participants generally show a moderate level of preparedness for digital technologies, with relatively low variability in responses. Its skewness value of -0.555 indicates a slight negative skew, meaning responses tend to lean towards higher values, while a kurtosis value of 0.020 reflects a distribution close to normal. E-Learning Adoption records a higher mean of 3.5387 and a standard deviation of 0.71447, showing greater acceptance of online learning with moderate variability; the skewness of -0.658 suggests a tendency towards higher agreement levels, and the kurtosis of -0.688 indicates a slightly flatter distribution. PBC has a mean of 3.4544 and a standard deviation of 0.80444, reflecting moderate confidence in controlling one's behavior regarding the task; the skewness of -0.633 again points towards responses clustering on the higher side, while the kurtosis of -0.352 suggests a slightly platykurtic distribution. Lastly, E-Entrepreneurship Intention shows the highest mean score at 3.5693 with a standard deviation of 0.68846, indicating a strong inclination towards engaging in entrepreneurial activities through digital means. Its skewness of -0.288 denotes a mild concentration towards higher values, while a kurtosis of -0.268 reflects a relatively flat distribution compared to the normal curve. This data overall suggests that participants exhibit favorable tendencies towards technology adoption, behavioral control, and e-entrepreneurship intentions.

Table 3: Reliability and Validity

Variable	Cronbach Alpha	Items	AVE
Digital Readiness	0.738	17	.535
E- Learning Adoption	0.737	05	.510
Perceived Behavior Control	0.811	06	.659
E- Entrepreneurship Intention	0.735	05	.534

The reliability and validity analysis of the study constructs shows that Digital Readiness achieved a Cronbach's Alpha of 0.738 across 17 items, indicating acceptable internal consistency, with an Average Variance Extracted (AVE) value of 0.535, reflecting satisfactory convergent validity. E-Learning Adoption recorded a Cronbach's Alpha of 0.737 for 5 items, also demonstrating good reliability, and an AVE of 0.510, which meets the threshold for convergent validity. PBC displayed the highest reliability among the variables, with a Cronbach's Alpha of 0.811 across 6 items, and a strong AVE of 0.659, indicating a high proportion of variance explained by the construct. E-Entrepreneurship Intention reported a Cronbach's Alpha of 0.735 for 5 items, with an AVE of 0.534, again meeting the required standards for reliability and validity. Overall, these results confirm that all constructs used in the study

possess acceptable internal consistency and adequate convergent validity for further statistical analysis.

Table 4: HeteroTrait MonoTrait Method

Items	DR	ELA	EEI	PBC
Digital Readiness	.556**			
E- Learning Adoption	.506**	.512**		
Perceived Behavior Control	.343**	.508**	.560**	
E- Entrepreneurship Intention	.389**	.565**	.552**	.586**

The correlation results demonstrate significant and positive associations among all study variables. Digital Readiness has a moderate positive relationship with E-Learning Adoption ($r = 0.506, p < 0.01$), indicating that individuals who are more prepared for digital technologies tend to adopt e-learning more readily. It also shows a weaker but significant correlation with PBC ($r = 0.343, p < 0.01$) and a moderate correlation with E-Entrepreneurship Intention ($r = 0.389, p < 0.01$), suggesting that digital readiness contributes to both confidence in performing entrepreneurial tasks and the intention to engage in digital entrepreneurship. E-Learning Adoption is moderately correlated with PBC ($r = 0.508, p < 0.01$) and strongly correlated with E-Entrepreneurship Intention ($r = 0.565, p < 0.01$), implying that adopting e-learning platforms not only strengthens individuals' self-efficacy but also boosts their entrepreneurial aspirations. Similarly, PBC exhibits a strong positive correlation with E-Entrepreneurship Intention ($r = 0.552, p < 0.01$), indicating that individuals with higher self-belief are more likely to pursue entrepreneurial ventures in the digital domain. Notably, the diagonal values, such as 0.556 for Digital Readiness and 0.512 for E-Learning Adoption, likely represent the square root of AVE, confirming discriminant validity among the constructs. These findings collectively suggest that digital readiness, e-learning adoption, and PBC are interrelated and jointly influence e-entrepreneurship intentions.

Table 5: Correlation

Items	DR	ELA	EEI	PBC
Digital Readiness	1			
E- Learning Adoption	.506**	1		
Perceived Behavior Control	.343**	.508**	1	
E- Entrepreneurship Intention	.389**	.565**	.552**	1

The correlation matrix reveals significant positive relationships among all study variables. Digital Readiness shows a moderate positive correlation with E-Learning Adoption ($r = 0.506, p < 0.01$), indicating that higher preparedness for digital technologies is associated with greater adoption of e-learning. It also has a weaker yet significant correlation with PBC ($r = 0.343, p < 0.01$) and E-Entrepreneurship Intention ($r = 0.389, p < 0.01$), suggesting that digital readiness contributes to individuals' confidence in managing tasks and their inclination towards online entrepreneurial activities. E-Learning Adoption demonstrates a strong positive association with E-Entrepreneurship Intention ($r = 0.565, p < 0.01$) and PBC ($r = 0.508, p < 0.01$), implying that adopting e-learning not only enhances entrepreneurial aspirations but also strengthens individuals' belief in their ability to perform effectively. Additionally, PBC and E-Entrepreneurship Intention share a strong positive correlation ($r = 0.552, p < 0.01$), indicating

that greater self-efficacy is linked to higher entrepreneurial intentions in a digital context. These findings collectively highlight that digital readiness, e-learning adoption, and PBC are interconnected factors that jointly foster e-entrepreneurship intentions.

Mediation Analysis

Table 6: ELA: Model Summary

R	R-sq	MSE	F	df1	df2	p
0.506	0.256	0.380	102.819	1	298	0.000

Variable	B	SE	T	p	LLCI	ULCI
Constant	0.839	0.268	3.123	0.002	0.310	1.367
DR	0.886	0.087	10.140	0.000	0.714	1.058

Table 7: EEI: Model Summary

R	R-sq	MSE	F	df1	df2	P
0.5176	0.2680	0.3493	54.3577	2	297	0.0000

Variable	B	SE	T	p	LLCI	ULCI
constant	1.444	0.261	5.523	0.000	0.929	1.958
DR	0.194	0.097	2.002	0.046	0.003	0.385
ELA	0.433	0.055	7.809	0.000	0.324	0.542

Effect	SE	T	p	LLCI	ULCI
0.194	0.097	2.002	0.046	0.003	0.385

Indirect effect(s) of X on Y:

Path	(β)	BootSE	Boot LLCI	Boot ULCI
DR → ELA → EEI	0.383	0.058	0.275	0.507

*Note: Bootstrap samples = 5000. Confidence level = 95%.

The mediation analysis using Model 4 from PROCESS examines the role of E-Learning Adoption (ELA) in mediating the relationship between Digital Readiness (DR) and E-Entrepreneurship Intention (EEI). In the first stage, where ELA is the outcome variable, the model shows a significant relationship between DR and ELA ($R = 0.5065$, $R^2 = 0.2565$, $F = 102.82$, $p < 0.001$), meaning that DR explains about 25.65% of the variance in ELA. The coefficient for DR ($\beta = 0.8861$, $p < 0.001$) indicates that higher digital readiness strongly predicts greater adoption of e-learning.

In the second stage, with EEI as the outcome variable, the model also demonstrates significance ($R = 0.5176$, $R^2 = 0.2680$, $F = 54.36$, $p < 0.001$), explaining 26.80% of the variance in EEI. Both DR ($\beta = 0.1943$, $p = 0.046$) and ELA ($\beta = 0.4333$, $p < 0.001$) significantly predict EEI, suggesting that while DR has a direct influence on EEI, ELA also makes a substantial contribution. The direct effect of DR on EEI ($\beta = 0.1943$, $p = 0.046$) remains significant, but smaller in magnitude compared to the indirect effect, which is 0.3839 with a 95% bootstrap confidence interval (0.2750, 0.5072) excluding zero. This confirms that ELA partially mediates the relationship between DR and EEI. In other words, individuals with higher digital readiness tend to adopt e-learning more, and this increased adoption, in turn, enhances their intention to engage in digital entrepreneurship.

Moderation

Table 8: EEI: Model Summary

R	R-sq	MSE	F	df1	df2	p
0.6015	0.3618	0.3056	55.9260	3	296	0.0000

Coefficients

Variable	(β)	SE	T	P	LLCI	ULCI
Constant	1.696	0.753	2.250	0.025	0.213	3.179
ELA	0.198	0.229	0.863	0.388	-0.253	0.650
PBC	0.253	0.229	1.106	0.269	-0.197	0.704
ELA × PBC (Int 1)	0.023	0.066	0.355	0.722	-0.106	0.153

Test(s) of highest order unconditional interaction(s):

R ² -change	F	df1	df2	p
0.0003	0.126	1	296	0.722

The moderation analysis using Model 1 from PROCESS tested whether PBC moderates the relationship between E-Learning Adoption (ELA) and E-Entrepreneurship Intention (EEI). The overall model is statistically significant ($R = 0.6015$, $R^2 = 0.3618$, $F = 55.93$, $p < 0.001$), indicating that the predictors together explain 36.18% of the variance in EEI. However, when examining the individual predictors, ELA ($\beta = 0.1982$, $p = 0.3887$) and PBC ($\beta = 0.2537$, $p = 0.2692$) do not show statistically significant direct effects on EEI in the presence of the interaction term. The interaction effect (ELA × PBC, $\beta = 0.0235$, $p = 0.7224$) is also non-significant, with the change in R^2 due to the interaction being minimal (0.0003) and statistically insignificant ($p = 0.7224$). This indicates that PBC does not moderate the relationship between ELA and EEI, meaning the effect of e-learning adoption on entrepreneurial intentions remains consistent regardless of the level of PBC. In other words, while both ELA and PBC may individually relate to EEI, their combined interaction does not produce an additional effect.

Discussion and implications

The corporate landscape has seen a paradigm shift due to the advent of technology and globalization. The surge of online businesses in Pakistan has resulted in the development of education and policies about e-entrepreneurship (Usman et al., 2024). Pakistan has seen a surge of internet enterprises. The subsequent sections, grounded in the theoretical framework of the TPB, will examine the influences of several factors on the e-entrepreneurial intentions of youth in Pakistan, along with the consequences linked to these aspirations.

Digital Readiness control and e-entrepreneurial intention

The study results revealed that digital preparation significantly influenced the intentions of young Pakistanis to participate in e-entrepreneurship. Numerous individuals contend that beginning an internet company is a high-risk venture with substantial potential returns. Nonetheless, the extent of digital readiness varies considerably according to the context (Mir et al., 2023). In recent years, technological advancements, especially the proliferation of the Internet, have enabled the establishment of firms inside the Internet economy in an efficient and effective way (Aloulou et al., 2024). Christodoulou et al., (2025) asserts that launching new online enterprises has become much easier due to the emergence of innovative business models grounded on information and communication technology (ICT).

E-learning Adoption and e-entrepreneurial intention

The study results indicate that the intentions of Pakistani youth toward e-entrepreneurship are influenced by subjective standards or societal pressure. Subjective norms are shaped by the behaviors of others. The observer recognizes the feasibility of creating,

developing, and attaining success in the online realm by seeing others who have accomplished it (Kumar et al., 2022). This conclusion is predicated on the premise that every human has methodologies, cognitive abilities, and other equivalent traits (Sujatha Priyadharsini, 2025). The Internet now suggests that one may establish a corporation online and sustain a credible presence, irrespective of previous limitations (Yemenici, 2022). Consequently, expectations have escalated since the Internet has created a universal platform for aspiring entrepreneurs to cooperate or operate independently, enabling them to cultivate and enhance the online ecosystem. The Pakistani experience social pressure to excel. In the domain of e-commerce, colleagues are progressively compelling people to participate in e-learning goal setting and the attainment of those aims (Sadiq et al., 2025). Young Pakistani individuals, being the largest demographic of information and communication technology adopters, believe that entrepreneurship is a societal norm in the educational sector. The Pakistani educational system places considerable emphasis on the notion of entrepreneurship (Khan et al., 2024). Pham et al. (2023) assert that most students engaged in e-entrepreneurship courses due to encouragement from their families and peers.

Perceived Behavioral control and E-entrepreneurial intention

The study results indicate that an individual's thinking, especially for e-entrepreneurship, does not significantly affect their goals. This intriguing finding needs more elucidation and thorough examination for future inquiry. When an individual intends to participate in a significant endeavor, such as rising from bed in the morning or accumulating funds to purchase a residence, their disposition aligns with that desire (Damon, 2009). The causal relationship between perceived behavior control and intention may not be relevant to startups in the e-commerce industry, especially within the pragmatic cultural framework of Pakistan. An individual's mindset will not impede the formation of a corporation (Kuratko et al., 2023). For instance, Reeve (2024) posits that one might experience bad sensations or emotions while yet having a strong motivation to create a firm. To attain success in the job, an entrepreneur will set aside personal emotions and focus on the elements that drive achievement (Sahoo et al., 2025). In this context, the primary objective is the attainment of desirable outcomes, rather than the transient sentiments or emotions encountered in the short term (Gómez-Jorge et al., 2025). The capacity to understand and regulate one's emotions is crucial for successful corporate decision-making.

The entrepreneur may detach from their emotions and focus on brand development (Reeve, 2024). This is when the entrepreneur achieves success in fulfilling their objectives. Control of attitudes is a contentious issue among young entrepreneurs (Kuratko et al., 2023). Individuals who are resolute and possess commercial acumen can separate their own disposition from the circumstances, irrespective of whether they are advantageous or adverse (Lowe, 2025). Conversely, those who cannot regulate their emotions may have more challenges in attaining achievement (Gál, 2025). They will encounter significant challenges in starting an internet enterprise or engaging in the operational framework of a corporation. Consistent with the results of the study indicated that perceived behavior control may not strengthen the relationship

between the E-learning adoption and E-entrepreneurship intention (Ademi et al., 2025). Moreover, the research demonstrated that perceived behavior control may not be necessary for the adoption of E-entrepreneurship intention. The current educational system in Pakistan hinders young individuals from establishing their own internet enterprises and achieving their aspirations in this regard. Students in entrepreneurship education are encouraged to adopt innovation-driven solutions to challenges like job creation, enhancement of employment frameworks, technological progress, and the establishment of new industries (Komodromos, 2025)

Government policy and e-entrepreneurial intention

The government's strategy that enhances national digital readiness while simultaneously expanding access to quality e-learning and fostering PBC self-confidence in one's ability to engage in entrepreneurial activities can significantly expedite e-entrepreneurial intentions (Al-Mamary et al., 2024). Recently established frameworks for digital governance prioritize comprehensive governmental plans, robust digital public infrastructure (including identity, payments, and data exchange), and user-centric services (Mashroofa et al., 2023). These pillars diminish transaction costs for people aspiring to initiate an online firm and provide dependable frameworks for the establishment of online enterprises (OECD). Organisation for Economic Co-operation and Development Targeted changes in emerging ecosystems may enhance digital readiness and diminish institutional barriers that impede entrepreneurial entry (Johnstone, 2023). These changes include affordable spectrum, enhanced connectivity, and regulatory frameworks that promote innovation. The Accelerated Mode National initiatives that allocate funding for artificial intelligence (AI), skill development, and startup assistance (including national AI funds and public R&D programs) indicate market potential and stimulate private capacity enhancement, thereby increasing opportunity awareness among students and professionals interested in digital technology (Mu & Zhao, 2024). The Arab News in this supportive environment, the adoption of e-learning acts as a catalyst for capability enhancement: recent research indicates that prolonged use of platforms enhances digital entrepreneurial knowledge, intention to utilize technology, and associated skills that contribute to the formation of intentions (Sultana et al., 2025). Governed by Science, PBC is consistently recognized as a robust predictor of individual entrepreneurial intention according to the TPB. An association exists between exposure to foreign training programs or business activities and an enhancement in PBC, subsequently increasing intention (Urban & Ratsimanetrimanana, 2025).

The private military company. Similarly, entrepreneurship education may function via PBC to shape intentions, indicating that policy-supported curricular mandates and digital curriculum would subsequently influence the propensity to pursue entrepreneurial activities (Rolando & Mulyono, 2025). Evidence from Springer Open supports the mechanism, which is as follows: Assessments of digital readiness emphasize that addressing infrastructural and skills deficiencies, especially in developing contexts, promotes equitable engagement in the digital economy and facilitates the creation of new enterprises (Hadjiisky, 2023). The Asian Development Bank Organisation for Economic Co-

operation and Development. Collectively, these three elements convert public digital investments into increased e-entrepreneurial intentions and, eventually, more resilient, opportunity-driven firms (Kang & Namisango, 2023). In summary, a cohesive digital strategy establishes the infrastructure, subsidizes high-quality e-learning, and enhances pro-business capital, driving the decision-making process.

CONCLUSION

The objectives and policies of e-entrepreneurship intentions in Pakistani individuals initiating online ventures. In the realm of e-businesses, these attributes may influence personal attitudes, normative beliefs, and PBC. The research findings indicate that the sole factors influencing e-entrepreneurial intention are digital readiness, e-learning adoption, and PBC. Conversely, if young individuals are driven, supported by social acceptance, and the ease of initiating an online business in Pakistan, e-entrepreneurship will likely proliferate among this demographic. E-commerce represents the prevailing trend in the business sector. Pakistan may be the nation most actively adopting this concept. The establishment of a brand in the digital realm, referred to as e-entrepreneurship, has become increasingly prevalent among youth. The objective is to cultivate and develop a culture that is distinctive to the organization, rather than conforming to an existing organizational culture. The demand for goods and services online is vast, diverse, and boundless, contingent upon the implementation of an effective strategy. The vast opportunities for young Pakistani entrepreneurs are available online, where e-business represents both the present and the future. This is particularly applicable to young individuals who have transcended the notion of employment under another's authority.

Limitations of the study

Nonetheless, the study is plagued by two notable deficiencies. This study had a cross-sectional research design, and only young individuals from the Pakistani adult population were solicited to participate in the survey. Consequently, the study results must be extrapolated with considerable caution. As time progresses and governments in this region enhance incentive programs and support for entrepreneurship, Pakistani youth are more motivated to establish their own enterprises, especially in e-business, to capitalize on opportunities. Additionally, it is important to note that the data were collected by self-administered paper and online questionnaires, which introduces the potential for common method bias. Nonetheless, we conducted Harman's one-factor test, including all measuring items into a factor analysis.

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